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THE USE OF STEARIN AS A FOOD PRESERVATIVE

BY

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BY EDWARD T. WILLIAMS, M. D.

The permanent preservation of food substances is one of the oldest arts. Dried vegetables, fruits and meats like hay, grain, peas, beans, raisins, figs, dried herbs, dried beef and the like were in common use among the ancients. Salted meats, fish, and pickles were also well known to them. Among the Greeks and Romans the preservation of meat in the form of sausages was a familiar art. The Greek words *ἀλλᾶς* and *φύσκος*, Latin *botulus* and *botellus* (English bowel and bottle), give full proof of this fact. They were the common words for sausages in the classic tongues. The meats so used were thoroughly cooked (which as we now know was simply for the purpose of freeing them from putrefactive germs), hashed up, and stuffed into sausage skins, by means of which they were fairly well protected from air and moisture and made capable of preservation for a considerable time. The modern method of preserving meats and vegetables in tin cans and sealed jars is only a later development of the sausage industry.

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The art of canning derived its first impetus from a Frenchman, François Appert, about the beginning of the last century. The theory that organic decomposition was caused by putrefactive germs from the air, earth, and water originated with Anastasius Kircher, a German priest (1601-1680), and Spallanzani, an Italian Savan (1729-1798). Kircher fathered the idea, Spallanzani supported it by his ingenious experiments, Pasteur (1822-1895) established it on a strictly scientific basis. Appert, however, who preceded Pasteur by fully half a century, taking his hint from the investigations of Spallanzani was the real inventor of the canning art, which he patented, and which remains essentially unchanged to the present time. Yet the foods preserved by this process were never entirely satisfactory, there is too much chance for the admission of air and moisture, hence most manufacturers are obliged to add chemical agents to prevent putrefaction, which are not only injurious to the health but often fail to accomplish their purpose. This was fully proved in the Cuban War.

The advantage of fatty substances as preservatives for animal products has been long known, though not covered by Appert's long expired patents. Goose liver pie and pemmican are good examples of such preserves. Pemmican is composed of dried and powdered beef combined with equal parts of beef tallow. It has long been known as a nutritious food for Arctic explorers, though it cannot be made available in warm or even temperate climates for two reasons. First, the amount of fat present (50 per cent) is too great for the digestion of any one but an Arctic voyager. Second, the low

melting point of beef tallow (105° F. to 110° F.) causes it to soften and grow rancid in temperate climates, and thus renders it more liable to decomposition.

About a year since it occurred to me to try a new preservative which should have all the advantages of tallow without its drawbacks. It struck me that if I could mix together tallow (or any of the softer fats, animal or vegetable) with a less fusible fat, like stearin, I might obtain a compound which would resist all natural temperatures without melting. The melting point of stearin is about 140° F. I found that by mixing stearin under heat with a softer fat like tallow, in about equal proportions, I could produce a fatty compound which would stand a temperature of 115° F. to 120° F. without melting, and consequently would keep unchanged even in tropical climates. In testing this compound as a preservative for animal hash I found it unnecessary to add more than one part of melted fat to nine parts of hash, which when cooled forms a solid cake impervious to air and moisture and capable of permanent preservation. I found the process could be applied to every sort of animal tissue or matter, like flesh, fish, fowl, eggs, livers, brains and spleens. The only point is that both fat and tissue must be perfectly sterilized by heat and packed immediately into sterilized cans to avoid all farther contact with putrefactive germs. I have specimens on hand put up nearly a year ago and since subjected to the severest tests without deterioration. This invention, as I believe, is destined to produce a total revolution in the canning industry so far as relates to the preservation of animal tissue or matter. It admits of no

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improvement, since the only possible substitutes for stearin, viz.: paraffine, wax and spermaceti are all incapable of digestion and would doubtless be prohibited by law as deleterious ingredients in any sort of food compound.

It is only fair to add that these compounds are fully protected by letters patent and cannot be lawfully infringed upon.



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